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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/764,488

01/27/2004

Dae-sik Kim

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EXAMINER

HASAN, MOHAMMED A

ART UNIT

PAPER NUMBER

2873

DATE MAILED: 02/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/764,488	Applicant(s) KIM ET AL.	
	Examiner Mohammed Hasan	Art Unit 2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 14, 15, 17, 30, 31, 39 and 40 is/are rejected.
- 7) ☒ Claim(s) 2 - 13, 16, 18 - 29, 32- 38 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1/27/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Receipt of acknowledged of papers submitted under 35 U.S.C. 119 (a) – (d), which papers have placed of record in the file.

Oath/Declaration

2. Oath and declaration filed on 8/13/2004 is accepted.

Information Disclosure Statement

3. The prior art documents submitted by applicant in the Information Disclosure Statement filed on 1/27/2004 have all been considered and made of record (note the attached copy of form PTO – 1449).

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 14, 15, 17, 30, 31 are rejected under 35 U.S.C. 102 (e) as being anticipated by Kim et al (6,850,369 B2).

Regarding claim 1, Kim et al discloses (refer to figures 3, 6A, 7A) a color illumination system comprising: a light source (10) that generates and emits white light, a spiral lens disc (20) that periodically scrolls light by rotational movement and has a spiral cylindrical lens array, which includes a plurality of cylindrical lenses (13 and 22), on at least one surface and an optical unit (15) that separates light beams of different wavelengths from the white light emitted from the light source (10) and guides the light beams to enter at least two effective regions of the spiral lens disc (20) (column 4, lines 60 – 66, column 7, lines 44 – 47, column 8, lines 36 – 38).

Regarding claim 14, Kim et al discloses (refer to figure 3) a fly-eye lens array (25) that is arranged in an optical path to receive the at least two light beams from the spiral lens disc (20) and which forms bands of light of different colors in separate regions from the at least two scrolling light beams from the spiral lens disc (column 8, lines 36 – 45).

Regarding claim 15, Kim et al discloses (refer to figure 3) wherein the fly-eye lens array (25) comprises: a plurality of first fly-eye lenses (i.e., lens array 25) that are arranged in the optical paths of the at least two light beams from the beam splitter (15), respectively and have a two – dimensional array of protrusions on an entrance surface

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and/ or have a two –dimensional array of protrusions on an entrance surface and /or an exit surface and a plurality of second fly-eye lenses (i.e., lens array 25) that are arranged next to the plurality of first fly-eye lenses and which have a two-dimensional array of protrusions on an entrance surface or an exit surface (column 5, line7 –8, column 8, lines 36 – 45).

Regarding claim 17, Kim et al discloses (refer to figures 3, 6A, 7A) a color illumination system comprising: a light source (10) that generates and emits white light, a spiral lens disc (20) that periodically scrolls light by rotational movement and has a spiral cylindrical lens array, which includes a plurality of cylindrical lenses (13 and 22), on at least one surface and an optical unit (15) that separates light beams of different wavelengths from the white light emitted from the light source (10) and guides the light beams to enter at least two effective regions of the spiral lens disc (20) ; an image forming unit that forms images using the light from the spiral lens disc (20) and a projection lens unit enlarges and projects that images formed by the image forming unit on a screen (column 4, lines 60 – 67, column 5, lines 1 – 5, column 7, lines 44 – 47, column 8, lines 36 – 38).

Regarding claim 30, Kim et al discloses (refer to figure 3) a fly-eye lens array (25) that is arranged in an optical path to receive the at least two light beams from the spiral lens disc (20) and which forms bands of light of different colors in separate regions from the at least two scrolling light beams from the spiral lens disc (20) (column 8, lines 36 – 45).

Regarding claim 31, Kim et al discloses (refer to figure 3) wherein the fly-eye lens array (25) comprises: a plurality of first fly-eye lenses (i.e., lens array 25) that are arranged in the optical paths of the at least two light beams from the beam splitter (15), respectively and have a two – dimensional array of protrusions on an entrance surface and/ or have a two –dimensional array of protrusions on an entrance surface and /or an exit surface and a plurality of second fly-eye lenses (i.e., lens array 25) that are arranged next to the plurality of first fly-eye lenses and which have a two-dimensional array of protrusions on an entrance surface or an exit surface (column 5, line7 –8, column 8, lines 36 – 45).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 39 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (6,850,369 B2) in view of Bierhuizen et al (6,839,095 B2).

Regarding claims 39 and 40 as applied to claim 17, Kim et al discloses all of the claim limitations except a reflection type liquid crystal display that forms images and a beam splitter that is arranged in front of the reflection type liquid crystal display and which alters the optical path of incident light such that the light from the optical unit goes toward the reflection type liquid crystal display and the light from the reflection type

crystal display is directed toward the projection lens unit. However, Bierhuizen discloses (refer to figure 4) a beam splitter (40), a reflection type liquid crystal display (26) (column 9, lines 27 – 31).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a beam splitter (40) and a reflection type liquid crystal display (26) in to the Kim optical projection system for the purpose of improved illumination systems and increased projected image brightness as taught by Bierhuizen et al (column 5, lines 20 – 22).

Allowable Subject Matter

6. Claims 2 - 13, 16, 18 – 29, and 32 - 38 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter: a beam splitter that splits the light beams from the color filter to enter the at least two effective regions of the spiral lens disc, a first dichroic prism that has a first mirror surface that is inclined at an angle to the optical axis of the incident light, reflects a first color light beam in the incident light and transmits light other than the first color light beam, a second dichroic prism that is disposed next to the first dichroic prism and has a second mirror surface that is inclined at an angle to the optical axis of the incident light, reflects a second color light beam in the light transmitted the first dichroic prism

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and transmits light other than the second color light, a third dichroic prism that is disposed next to the second dichroic prism and has a third mirror surface that is inclined at an angle to the optical axis of the incident light and reflects a third color light beam in the light transmitted through the second dichroic prism, the first, second, and third surfaces of the first, second and third dichroic prisms, which are located inside the color filter, allow light that enters at an angle satisfying the conditions of internal total reflections to be totally reflected, minimizing loss of the first, second, and third color light beams, a second collimating lens that is arranged in an optical path between the color filter and the beam splitter and which converges first, second, and third color light beams from the color filter, a first spiral lens disc that scrolls incident light and a second spiral lens disc that is spaced a predetermined distance from first spiral lens disc and which corrects the angle of divergence of at least two light beams from the first spiral lens disc, a fourth relay that is arranged in the optical path of light beams from the fly-eye lens array and which focuses the bands of light of different colors from the fly-eye lens in predetermined positions, and an integrated optical element that alters the directions in which light from one of the first and second effective regions of the spiral lens disc scrolls such the light beams from the first and second effective regions scroll in the same direction and that combines the light beams from the first and second effective regions.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The closest prior art

Kim (US 2004/0046946 A1) discloses, a projection system employing two light sources or two light valves.

Naito (6,710,909 B2) discloses, a projector has an illuminating optical system for irradiating white light, a color switching optical system for dividing the white light irradiated by the illuminating optical system into color lights in a time-division manner.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohammed Hasan whose telephone number is (571) 272-2331. The examiner can normally be reached on M-TH, 7:00 AM to 5:30 PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on (571) 272- 2328. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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February 10, 2005



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